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## LUBRICATION SYSTEM USING VALVES TO MEET VARIOUS ENGINE OIL PRESSURE REQUIREMENTS

### ABSTRACT OF THE DISCLOSURE

A lubrication system for an internal combustion engine having valves to optimize oil flow through an engine to increase engine efficiency. The lubrication system includes an engine driven oil pump connected to  
5 supply pressurized oil through a main oil feed to a main bearing gallery, a cam gallery, a cam phaser and switching valve lifters. A pair of pressure increasing valves connected to the main bearing gallery and the cam gallery selectively restrict oil flow to the cam gallery and the main bearing gallery to raise oil pressure supplied to the cam phaser. A pressure regulator valve is  
10 connected to the cam gallery to control oil pressure supplied to the switching lifters for cylinder deactivation or stepping valve train operation. The optimization of oil flow allows the engine to use a smaller oil pump and thereby increase engine efficiency while providing for actuation of the cam phaser or the switching lifters over the full engine speed range.